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inhalation therapy

August 1961
Volume 6 Number 4

IN THIS ISSUE

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Part II in the Series on

Pharmacology of Inhalation Therapy

Profile of the Convention City

Buffalo

Prevention of Cross-infection in

Oxygen Tents

The Second Story on the workings of

A.A.I.T. Headquarters

JOURNAL OF THE AMERICAN ASSOCIATION OF INHALATION THERAPISTS

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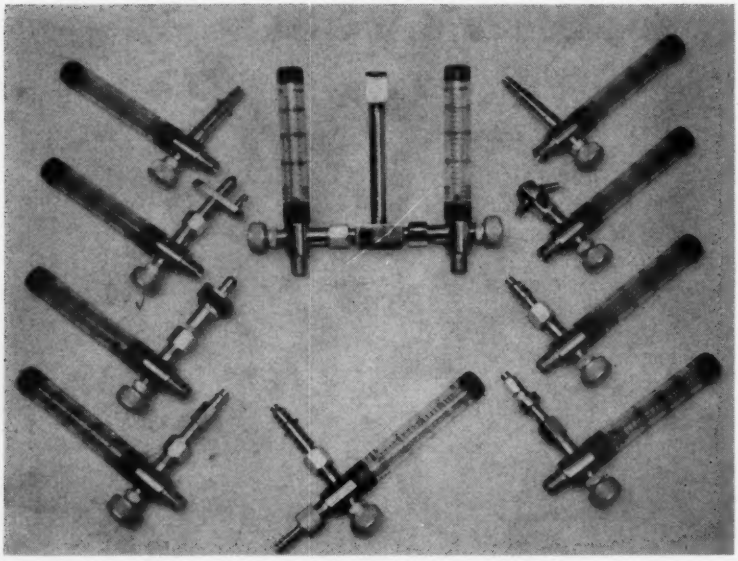

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VOLUME 6 NUMBER 4

inhalation therapy

AUGUST 1961

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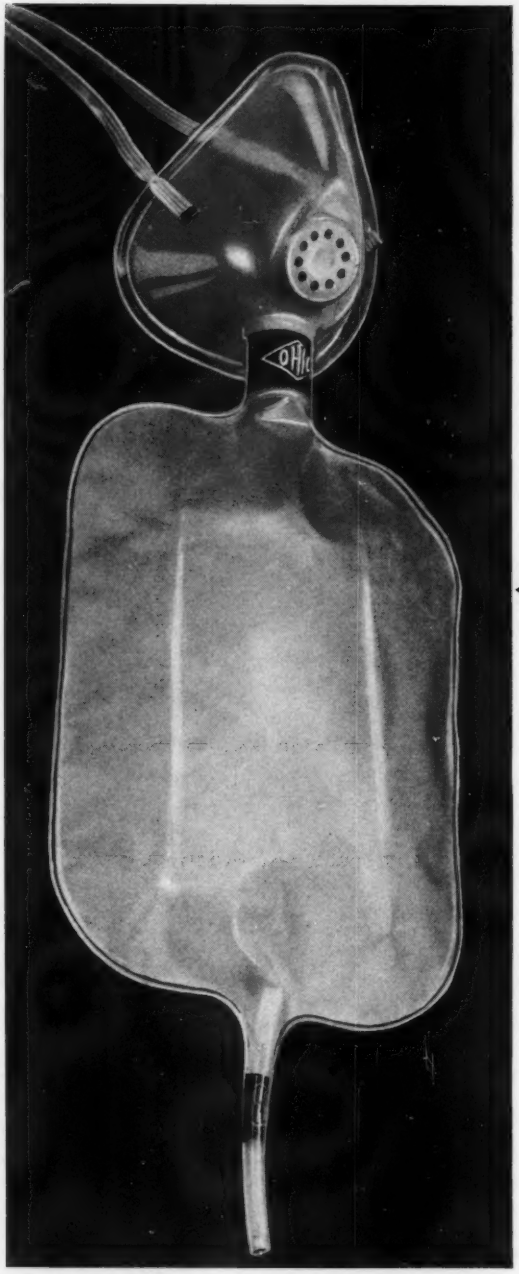

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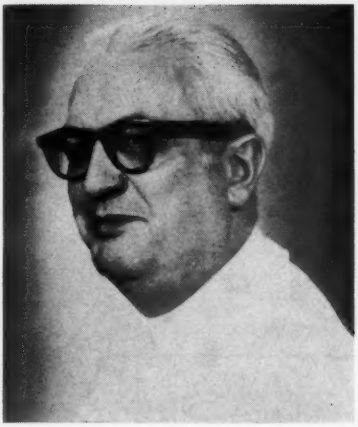

Editorial

A Charge to Keep

RECENTLY my mind became involved in this thought of "A Charge to Keep."

It seems to me that such a charge has been handed to the American Association of Inhalation Therapists. This is all the more true now that the Registry is a fact. No group of professional people can exist as such for long unless they recognize their heritage.

This heritage which has been given the AAIT involves the very pulsations of life itself. Ours is truly a responsibility to work with and under the guidance of the medical profession in this our chosen field of endeavor.

Professional skill comes with both the acquiring of knowledge and the daily routine of experience. The inhalation therapist must often be reminded that his work is basically humanitarian in nature. The application of his technical approach is but the professional expression of his basic desire to aid in the recovery of the afflicted patient.

Just as the spring sunshine thaws the cold and frozen earth, so left by winter's blast, even so must be the approach of the therapist to his task. Ofttimes when entering a patient's room, a smile of confidence from you will mean much towards allaying the fears and apprehension of the ill. We are all fellow travelers on this road of human relations. None of us can hope to escape it. It is a truism, that what I send out returns to me in kind.

I have been in the inhalation therapy field a good many years; but recently it was brought home to me how important its function really is. My father, who recently passed away at the age of eighty-one years, was placed in an oxygen tent. He was not a patient in my hospital, but as I stood by and watched the efficient procedure of the technician and nurses, I re-lived many like experiences of my own. However, because of the patient involved this time in particular, the entire matter became a very personal thing. I now know how others must feel when inhalation therapy is administered.

Professional skill must be exercised to the utmost in the carrying-out of our obligation; but with it we must also strive to feel the common bond of brotherhood for the needs of mankind in this endeavor.

Truly, ours *is* a charge to keep, fellow members of the AAIT! Wear proudly your official insignia pin, and hang upon the wall with humility your Certificate of Registration.

—Noble Price
Chairman of the Board
AAIT

Pharmacology of Inhalation Therapy: Part II

Here are handy data for reference

by Melvin H. Hall

Editor's Note: With apologies to Mr. Hall, we start this second part of the article with material on enzymes and antibiotics which rightfully belonged on the end of the first part, since it does not deal with the subject matter of Part II.

ENZYMES MAY THIN SECRETIONS

There are several enzyme preparations available for aerosol application, like Dornavac and Tryptar (both trade names), which break down (actually, they *digest*) some of the more viscous components of mucus, thus rendering the secretions thinner and easier to evacuate.

This can produce a striking clinical improvement in a local area of infection, because with the removal of accumulated muco-purulent secretions, the anti-infective forces of the body are aided, and antibiotics administered by aerosol can gain more direct access to the infected area. Normal repair of tissue is consequently hastened. With thinner secretions, normal ciliary action is better able to move them up into the pharynx, or to where they can be coughed out.

Sometimes when patients have nonproductive coughs, and the physician wishes to obtain sputum for cytologic study—especially to look for carcinomatous cells, enzyme preparations are helpful in loosening enough material for a smear.

Mr. Hall is chief inhalation therapist at Variety Children's Hospital in Miami, Florida.

These preparations come in powder form and are mixed with sterile water before use in the nebulizer. Once mixed, they should not be refrigerated, but kept at temperature of from 35 to 50° F. Extremes of temperature will inactivate the enzyme. Unused portions should be discarded after 24 hours.

Since enzymes are proteins, their use in this manner is not without the risk of occasional allergic reactions to foreign protein. The incidence of these has been high enough to make some physicians reticent to use them except as a last resort. Certainly, therapy with enzymes should not be undertaken without suitable anti-histamines and shock-treating drugs immediately at hand.

Limitations and dangers are inherent in the use of antibiotics, too. Like higher plants and animals, disease-producing bacteria are able to adapt to new environments. Unfortunately, bacteria growing in the presence of antibiotics in the body sometimes change in such ways that they are no longer seriously affected by the antibiotic. They are then said to have become *fast* or *resistant* to them.

An increasing number of cases is noted where a disease is not cured by an antibiotic which formerly was effective. Bac-

teria readily develop resistance to Streptomycin, especially in cases where long courses of treatment are required. Some strains of microbes today will withstand a thousand times more streptomycin than the same strain did originally.

It is therefore important that the patient take the correct amount of antibiotics, to lessen the chance of resistance developing. This is one of the chief reasons for individuals to take antibiotics except under a doctor's supervision. Also, antibiotics often produce poisonous and/or sometimes allergic effects in the body. Persons have died from taking improper doses or the wrong kinds of antibiotics.

BEGINNING OF PART II

THE inhalation therapist should put forth the greatest effort to get acquainted with terms and abbreviations used in the medical profession and its paramedical affiliations. Of course, he does not claim to be a registered pharmacist, but he is a professional person in daily contact with doctors, nurses and others. It is, therefore, his responsibility to acquire a good and reasonable amount of information for his own use and benefit, and for the facilitation of receiving and carrying out the physicians' requests.

Pharmacopeia sets standards

The United States Pharmacopeia (usually designated as U.S.P.) is a publication in which the approved therapeutic agents used in medicine are described and defined with respect to source, chemistry, physical properties, tests for identity, tests for purity, assay of strength or potency, methods of storage, and average therapeutic dosage.

Most of the preparations in the U.S.P. are single drugs. In the case of those which must be compounded, instructions are given for their preparation. The object of the U.S.P. is to provide standards for drugs and medicines of therapeutic usefulness or pharmaceutic necessity.

What is a prescription?

A prescription is a physician's order for medicine. The first essential of such an order is that it be clear and free from errors. The use of Latin in writing prescriptions is an old tradition that some physicians feel should be abandoned. Modern physicians and pharmacists are not at home in this language, and are therefore more liable to make errors. The use of abbreviations is universal; but care must be used that they are not ambiguous.

The prescription is composed of four chief parts—the superscription, the inscription, the subscription, and the signature.

The superscription is the Rx heading. This stands for Latin *recipe,* or "take thou." The stroke has been considered an ancient invocation to Jupiter; but probably it is simply a sign of abbreviation.

The inscription is merely a listing of the ingredients and their amounts.

The subscription gives directions to the dispenser (pharmacist). With liquid mixtures, these may be confined simply to "M" or *misce* (the Latin form of mix).

The signature (from Latin *signa,* sign or label) is the doctor's instructions to the patient regarding how much and how often the medicine is to be taken. This is usually abbreviated Sig. or just S.

The following Latin words and phrases are still more or less current in prescription writing:

LATIN	ENGLISH EQUIVALENT
ad	to, up to
ad libitum	at pleasure
ana (aa)	of each
ante, a	before
ante cibum, a.c.	before meals
aqua destillata	distilled water
bis in die (b.i.d.)	twice a day
cum, c	with
gutta (gtt), guttae (gtts)	drop, drops
hora	an hour
hora decubitis (hd)	at bed time
hora somni (hs)	just before going to sleep
mane primo	very early in the morning
misce (M)	mix
octarius (o)	a pint
quaque die (q.d.)	every day
quaque hora (q.h.)	every hour
pro re nata (p.r.n.)	according to circumstances
post, p; post cibum, p.c.	after; after meals
quarter in die (q.i.d.)	four times a day
semel in die (s.i.d.)	once a day
semis (ss or ss)	one half
sine (s)	without
statum (stat)	immediately
ter in die (t.i.d.)	three times a day

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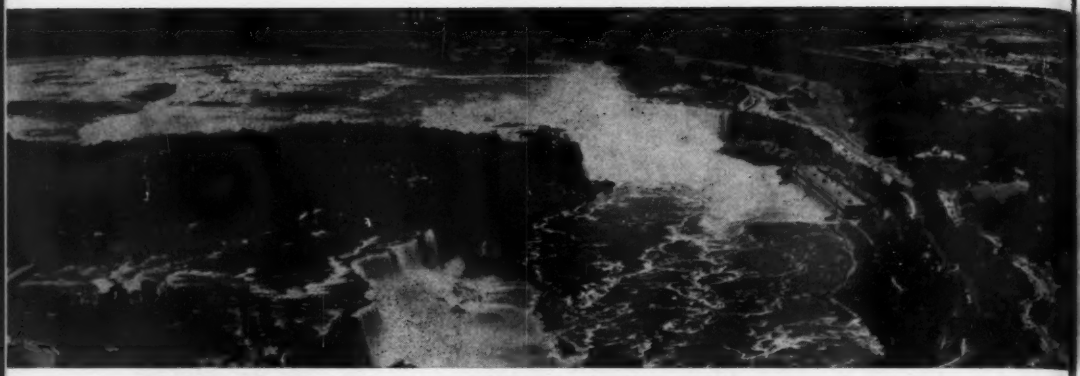

BUFFALO: Queen City of the Niagara Frontier

by Frank Huston

ON Lake Erie at the source of the Niagara River, Buffalo, second largest city in New York State, is the focal point of a great historical and scenic area known as the Niagara Frontier.

To add to its fame, this year Buffalo can now boast of being the site of the Seventh Annual Meeting and Lecture Series of the American Association of Inhalation Therapists.

Members from every corner of the United States and Canada will gather at the city's largest and finest hotel, the Statler-Hilton, in the heart of the downtown area. Directly opposite it stands the City Hall Building, one of the largest in the United States. Separating the Hotel and City Hall is beautiful Niagara Square marked by a graceful obelisk of pale, weathered granite.

Buffalo is rich in things of the past and things of the present. When the St. Lawrence Seaway was completed Buffalo became a world port. Ships of every nation dock in Buffalo with the result that nearly 16,000,000 tons of cargo are handled yearly. Its recently completed airport handles 200 scheduled commercial flights daily, and the railroads in and out of the city handle 20,000,000 tons of freight yearly. Easy to understand why this bustling metropolis has employers able to pay an average weekly wage over $100.00 as compared to the $90.00 weekly on the national level.

As a foundation and an enrichment for its ever-expanding economy and increasing population, Buffalo has many reminders of America's past. For Niagara, a few miles from the city limits takes the visitor back to the 18th-Century Revolutionary War days. Across the river in Canada are the famous Forts Erie and George, famed in the War of 1812.

Being the 14th largest city in the United States, Buffalo's metropolitan area provides the visitor with every comfort, convenience and luxury. Innumerable motion picture theaters, restaurants and stores enable the conventioneer to spend his leisure time however he wishes. And though they will not be in bloom, the city is famous for its beautiful trees (400,000 under the direct care and protection of the City Forestry Department).

A short distance from the city proper is Niagara Falls, one of the Seven Wonders of the World. It is here that the Seventh Annual Meeting of the AAIT will officially terminate.

After the Annual Business Luncheon on Thursday, special busses will take the registrants on a leisurely sightseeing trip to the Falls, where they will visit the newest and most spectacular structure, the Observation Tower. This aluminum, steel and glass marvel of engineering science rises 281 feet from the floor of the gorge, towering over 100 feet above the top of the cliff.

From there, a short ride to another vantage point, the beautiful Brock-Sheraton Hotel, where we will dine, using the Falls as a fitting and exciting background for the end of another important year in the advancement of the AAIT.

Now You Can Be Sure Your Tents Won't Cross-Infect

by David V. Nuerenberg

PROBABLY the most important aspect of any equipment maintenance program in inhalation therapy is the cleaning and terminal disinfection of the apparatus. Any piece of equipment which can be immersed in solution or autoclaved can be easily disinfected; hence the proper procedures for cleaning these items are well established, and offer no particular problem to the well-staffed department. However, the sterilization and maintenance of such apparatus as oxygen tents or complicated respirators such as the Van Bergen have presented quite a problem for us.

For over a year, department personnel have wrestled with this problem, when it became evident that our tent units were not being completely disinfected—due in part to the inaccessibility of the cooling coil chamber and the devious route taken by the input and exhaust circuits. We found, through almost complete dismantling of the unit, that entire areas through which all of the patient's air must pass, were not reached by our cleaning method.

David V. Nuerenberg is Chief Inhalation Therapist at St. Mary's Hospital, Minneapolis, Minnesota.

Painstaking cultures disclosed that we were, in effect, providing fine incubating areas for many types of micro-organisms. Cultures taken from the ventilator fan area (see Fig. 1) before cleaning showed the predominant organisms to be *bacillus subtilis* and *staphylococcus albus*. After cleaning by the method which shall be described, the *staphylococcus* was eliminated.

Many tent units of various makes and models are so constructed that important areas which are part of the closed patient-cooling system cannot be adequately decontaminated without dismantling, a procedure which is highly impractical and time consuming after each patient use.

Inasmuch as all of our tents are McKesson models, the method used will apply to this type of unit. However, with few simple modifications, the procedure can easily be adapted to other types. Our tent maintenance program is conducted on the assumption that ALL units are grossly contaminated following each patient use, so the following procedure is done immediately after each use:

EQUIPMENT (See Fig. 2)

One nebulizer or aerosol-type humidifier. The DeVilbiss Continuous Flow Nebulizer, Model No. 841 was found to be most adequate for this purpose, producing a constant flow of heavy fog. Many other makes are suitable also.

Power source to drive the nebulizer. We use oxygen to operate our unit, but an air compressor can be used as well.

An extra sleeve, perforated to accommodate the tubing from the nebulizer.

A length of plastic tubing from the nebulizer to the sleeve.

AEROSOL SOLUTION

Any solution capable of being aerosolized and all-inclusive in their disinfecting action—i.e., capable of destroying vegetable bacteria, influenza viruses, enteroviruses and the tubercle bacillus, may be used. We have used "Osyl," a phenolic germicide, diluted to 50% final concentration. While this concentration may seem quite high, experimentation by other departments might result in a considerable decrease. The solution we use, however, while producing a heavy fog, also tends to deposit a fine film on the treated surfaces, resulting in a continuing germicidal action. After airing for 24 hours, this solution leaves no objectionable odor, nor is it irritating or toxic.

Other types of germicides may be used if they fulfill the requirements. We have encountered no problem with rust, al-

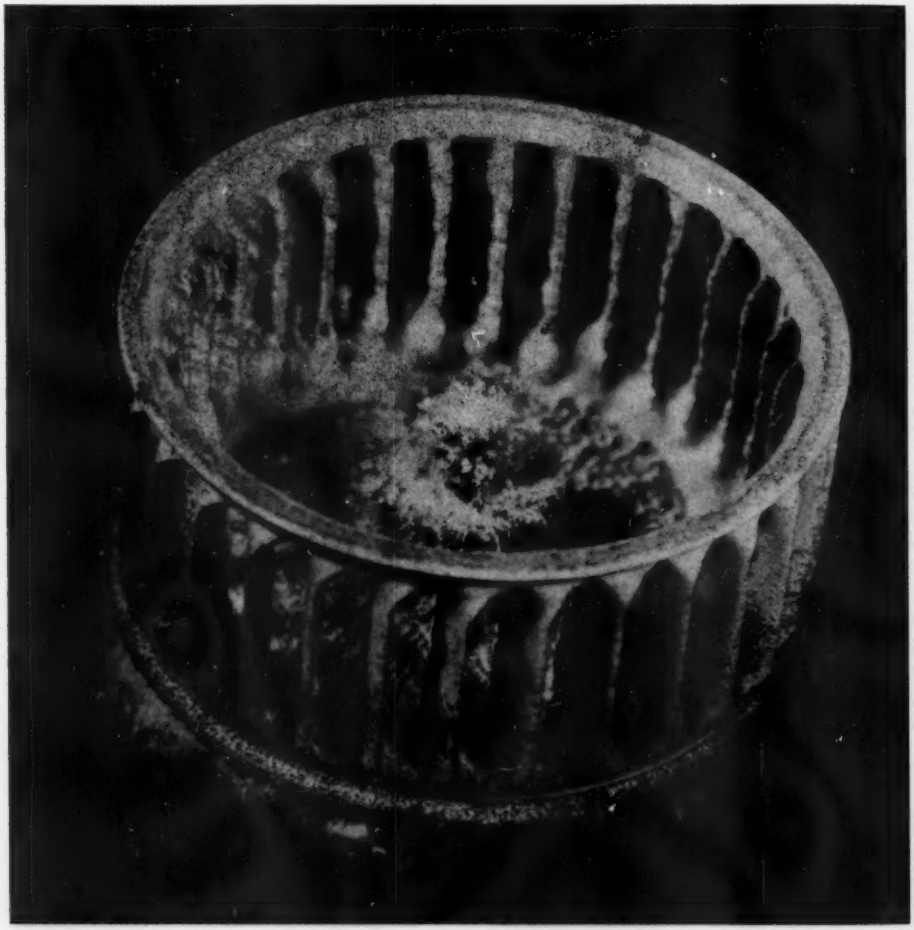

FIG. 1

Do your tent ventilator motors look like this? Motor unit removed from tent prior to establishing controlled maintenance program.

though anti-rust compounds may be added to certain of the germicides if desired. These compounds will vary with the type of solution used.

PROCEDURE

Set up the apparatus as shown in Fig. 2. The nebulizer is attached to the base of the exhaust sleeve via a plastic tubing from the nebulizer outlet, penetrating the sleeve. The sleeve which has been removed from the exhaust side of the unit is attached from the input to the exhaust side to make a closed circuit, and the tent canopy is closed.

The thermostat is set at its lowest point, to permit rain-out of the aerosol as it is carried through the chambers. The ventilator control is set at about one-fourth speed. (With most tents, merely see that the air circulating fan motor is on.)

The nebulizer is then turned on and adjusted to produce its maximum density fog. The cooling system switch is then turned on, and disinfection begun. We have found that one hour of such treatment will effectively disinfect the unit, as evidenced by cultures.

Following this "Vaposyl" treatment, the tent motor is shut off, the sleeves are removed, settings turned back to normal, and the interior of the unit is blown out to remove dust. The exterior is cleaned, and after airing for at least 24 hours, the unit is ready for further use.

In addition to the above after-use cleaning, each tent is dismantled every six months, during which time the ventilator is removed and oiled, the fan is cleaned, electrical wiring checked, and defective or worn parts repaired or replaced.

We have effectively used this same method with few modifications on other closed-circuit type apparatus with satisfactory results.

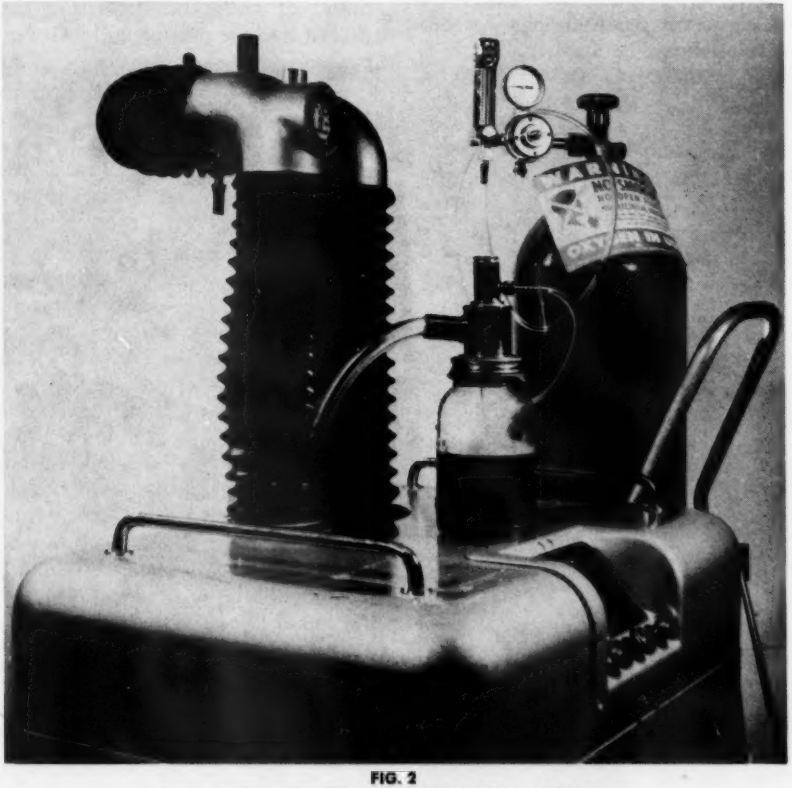

FIG. 2
Apparatus Set-up For "Vaposyl" Method of Tent Disinfection.

Your Association—And How It Operates

MANAGING an association the size of the A.A.I.T. is an exacting job. In the first article we described the duties of the Executive Secretary, Miss Sandy Hamen.

In this article, we shall examine the responsibilities of Frank Huston, who serves as Convention Manager for our Annual Meeting, and as Production Manager for this journal.

Frank Huston is an associate on the staff of Albert Carriere, Inc., the counseling firm which serves the American Association of Inhalation Therapists.

A graduate of Loyola University, Frank worked as the Sales Promotion Director for Bonwit Teller for three years before taking his present job.

This genial young man is responsible, first of all, for getting out *Inhalation Therapy* six times a year, on schedule. In his capacity as journal Production Manager, he works with a number of people including: Jim Whitacre, Editor; Sam Turiel, our Advertising Representative, your Executive Director, Albert Carriere, and with the printer's Account Executive, Bob Sell.

In publishing any magazine, the first thing required is copy, or articles. The second requirement, of course, is Advertising, for it is advertising revenue which helps pay the expense.

Mr. Huston is a graduate of Loyola University and has done post-graduate work at Northwestern University School of Journalism and the Chicago Academy of Fine Arts, Graphic Arts Division.

Advertising in *Inhalation Therapy* is sold to industries by Sam Turiel, whose job it is to get the advertising copy to the printer.

Meanwhile, articles for *Inhalation Therapy* have been collected by Editor Jim Whitacre, in Rochester, New York, who sends them, along with art work and pictures, to Frank Huston, here at headquarters.

It is Frank's job to take the articles, pictures, art work, and advertising material, submit it to the printer, and wait for galley pages.

From these galley pages, Frank makes up a dummy for each issue of the magazine, and re-submits the paste-up to the printer, sends a copy to Jim Whitacre in Rochester, and gives a copy to your Executive Director.

The phrase "makes up a dummy" should not be taken literally, and is far more complicated than it sounds. It means that Frank must in effect design the format of the magazine, making sure the copy fits, and that the illustrations are the right size, that the over-all effect is one of professional good taste. He must also please our advertisers by making certain that their material is properly handled. And, particularly, that there are no mistakes.

With at least five—sometimes six—persons reading every issue, you would think it impossible to miss typographical errors. Yet in our last issue there were two!

The next step is for the printer to page-up the material, and then to send three sets of page-proofs back to Frank Huston.

Once again, Frank keeps the first set for his own proof-reading, mails a second set to Jim Whitacre in Rochester, and gives a

The top left picture illustrates a typical Journal planning conference (left to right) Advertising Representative, Samuel N. Turiel, A.A.I.T. Secretary, Sandy Hamon, Executive Director, Albert Carriere, Production Manager, Frank Huston and Printer's Representative, Bob Sell.

As the magazine begins to take shape, there are production decisions (picture in upper right) and proof reading (lower left) before it can finally go to press (lower right).

third set to your Executive Director. Again the entire issue is read carefully for content, typographical errors, etc.

When every one concerned has indicated approval, the master set of page proofs is sent to the printer—with corrections and changes, if any—and then the forms are locked up and the magazine is printed.

Inhalation Therapy is received by all members of the A.A.I.T., by a small list of subscribers, by a larger list of doctors to whom it is sent on a complimentary basis.

A large number of journals are circulated via our bulk subscription method. Briefly, using this system, our Service Company members buy, say, 500 magazines for distribution to their own mailing lists in their local areas.

Each magazine contains a printed insert, stapled into the center spread, which informs the recipient that *Inhalation Therapy* comes to you through the courtesy of the ABC Oxygen Company.

In this way, the Service Companies have an effective mailing piece at a low cost—for less than they would pay if they printed a journal themselves!—And the A.A.I.T. has a larger circulation among doctors, nurses and hospital administrators, opinion leaders whom we are anxious to reach.

One of the greatest blunders ever committed was the mix-up of lists so that our regular A.A.I.T. members received magazines which were meant for the people on the bulk subscribers lists. Needless to say, we heard about it from many people, and TWA Airlines has a standing order for two one-way tickets to Borneo, should it ever happen again!

After the journals are mailed, the bulk subscribers must receive invoices. Also, a critique is held at headquarters to determine what things in the last issue were not up to our usual standard. Often invited to attend these sessions are Sam Turiel, the advertising representative and Bob Sell, representing the printer.

About twice a year, Jim Whitacre manages to attend, and there can be no doubt that improvement in the publication often results from these critical sessions.

Among the long-range projects for the promotion of our publication are several which we have started on a modest scale, due, largely, to lack of funds.

The first of these is simply to send a sample issue of *Inhalation Therapy* to every hospital administrator, and to every Chief of Anesthesiology in the United States and Canada.

Another is to bring the journal to the attention of all doctors in the United States and Canada, probably by taking a full-page ad in various medical and hospital journals. (Someone suggested sending a sample copy to all members of the A.M.A. and the C.M.A. This, however, would put us in debt for the next 99 years.)

This phase of Frank Huston's job is really a kind of liaison function, for he not only directs the publication, but serves as a go-between, if you will, for a number of different component elements which when put together result in a magazine.

The second part of Frank Huston's job is a lot more difficult. It involves almost all the behind-the-scenes preparation for the annual meeting and lecture series.

To begin with, the A.A.I.T. meeting places and hotels must be chosen years in advance. Especially now that the association is growing so rapidly, we must be all the more prepared in advance since there are not too many hotels that can handle a group this size. So we try to work at least five years ahead.

It is Frank's job to write to the city designated for any particular year, and to obtain a list of hotels from the Chamber of Commerce.

He then mails an 9-page questionnaire to each hotel, and asks them to return them if they are interested in handling our annual meeting.

To some people, the use of a questionnaire seems like a lot of needless, extra work. But we have found that it is better to investigate beforehand, than to repent afterwards.

The questions we ask have to do with accommodations, room rates, location, meal charges, exhibit space, lighting, dray-

age, decorating, photographers, size of elevators, and segregation. The latter because we will not meet in a hotel which places any restrictions against our minority members.

When the questionnaires are returned, they are tabulated. The two or three most likely hotels are chosen.

Then Frank Huston makes a special inspection trip to that particular city, and spends a day or more examining the various hotels, and then determines which is best suited in all ways for the A.A.I.T. While there, he also examines the possibilities for field trips, excursions, sightseeing, etc.

While in the convention hotel, the Convention Manager goes over a copy of the weeks' program with representatives of the hotel. He then goes on a tour of the premises, to ascertain whether or not the facilities are adequate for the various meetings and luncheons. Also inspected carefully is the exhibit hall, elevators, loading platforms, etc.

From the time he returns to Chicago until he again visits the Convention City, Frank Huston is constantly at work on plans for the annual meeting.

An architect's plan of the exhibit hall, showing the size of the booths and indicating the price—must be prepared along with a sales promotion letter for all potential exhibitors.

A master record must be kept of booth reservations and payments. If the sale of exhibit space is slower than the previous years, a second promotion mailing must go out.

All speakers are then written to for their biographies, time of arrival, and to find out whether or not they need any special projection equipment.

Meanwhile, the program and announcement must be printed and distributed to almost 20,000 persons throughout the United States and Canada.

Letters of instructions must be written and sent to all representatives of the industries taking booth space.

With all of these things, there is also a multitude of little chores—ordering scratch pads, souvenir pens, luncheon tickets, receipts, plaques, badges, ribbons, and dozens of other items necessary for the success of any annual meeting.

In addition to the endless preparations, the Convention Manager is on tap throughout the meeting itself.

Such things as printing a complete list of all registrants, taking photographs, sending out news releases, arranging for newspaper, radio and television interviews, making certain that meetings are held on schedule, that projectors are available when needed, that guest speakers are met and introduced, that the right people are at the speaker's table at the right time, and, in general, acting as the right and left hands for your Executive Director.

Finally, when it is all over, when the last exhibit has been struck, and the last A.A.I.T.'er has left, Frank Huston and his associates close the meeting and hurry back to Chicago—there to start the entire process over again!

—Albert Carriere
Executive Director

Mark November 6 to 9 on your calendar as the date to

SHUFFLE OFF TO BUFFALO

CHAPTER ACTIVITIES

by Howard R. Dockham

Chapter Secretaries: Please send reports and notices to the new address:
Howard R. Dockham
4618 East Douglas
Tucson, Arizona

On Wednesday, May 31, 1961, THE KENTUCKY SOCIETY OF INHALATION THERAPY became a charter chapter of the national association when Mr. Albert Carriere, Executive Director of the A.A.I.T., presented the charter in person. The officers of the new chapter are: President, Mr. James C. McGaw; Vice-President, Mr. Martin A. Schoenblacher; Secretary-Treasurer, Mr. Charles D. Beam. The two elected delegates of the Executive Board are Mr. James W. Green and Mr. Thomas G. Sturgeon. All good wishes and hopes for success go to this new chapter.

At the March meeting of the GREATER WASHINGTON CHAPTER, Dr. Seymour Alpect, Vice-Chairman of Anesthesiology at the George Washington University Hospital, and a member of the chapter's Advisory Board, gave a lecture on "Management of the Polio Patient." Post-operatively, the polio patient receives at least 24 hours in the Chest Respirator, said Dr. Alpect. The Chest Respirator was used because it (1) prevents atelectasis, and aids drainage, and (2) because simple positive pressure causes a decrease in venous return to the left heart. At the April meeting of the chapter, Dr. Archibald S. Russell, Dept. of Anesthesiology, Washington Hospital Center, lectured on "Rudimentary Pulmonary Physiology." He illustrated his lecture with a new type of visual aid called Technamation. These plates are covered with acetate overlays which show color, motion and directional flow when a polarized light is used behind the plate.

The NORTH TEXAS CHAPTER sponsored an all day session on April 14, 1961 at the Episcopal Hospital, Fort Worth, Texas. Thirty hospitals and clinics and 14 services attended. Plans for another seminar in September of this year, and one for 1962, were discussed at the May meeting.

Present at the Southern California meeting in May were (back row left to right): Mary Margerison, Lenora Brenton, Gilbert A. Griffin, Lillian Van Buskirk, Hurley Motley, M.D. Front row: Albert Carriére and Charles Tate.

At the April meeting of the SOUTHERN CALIFORNIA CHAPTER, it was announced that Dr. Hurley L. Motley, Director of the Cardio-Respiratory Laboratory at the University of Southern California School of Medicine, had accepted an appointment as Medical Advisor to the chapter. Mr. Albert Carriere, Executive Director of the A.A.I.T., was the special guest speaker at the May meeting. Mr. Carriere outlined the measures and attitudes of conduct chapters should take towards better professional services.

At the March meeting of the GREATER NEW YORK CHAPTER Mr. Homero Rosado resigned his elected post as Board Member, 1964 and Mr. Gilbert Richards was elected by the Executive Board to the position of Board Member to 1964.

At the April meeting of the FLORIDA SOCIETY OF INHALATION THERAPISTS, Mr. M. E. Glasser presented a program on resuscitation and resuscitators, illustrating his lecture with many models of resuscitators.

At the April meeting of the ROCKY MOUNTAIN CHAPTER, Dr. George W. Holt, a Neurologist and a member of the consulting Staff of the Inhalation Therapy Dept. of the Presbyterian Hospital in Denver, spoke on "Anoxia of the Brain." After this, the members were taken on a tour of the special departments of the recent addition to the Presbyterian Hospital. The By-Laws Committee was charged to draw up an area map covering the geographic territory included in the chapter, which was reported at the May meeting.

At the April meeting of the WESTERN NEW YORK CHAPTER, Dr. Jerome Maurizi was introduced to the members as a Medical Advisor of the chapter. Mr. James Whitacre, President of chapter, gave a detailed lecture on the requirements and procedure for taking the examinations for the Registry. A partial list of references containing information may be obtained by thumbing through back issues of the JOURNAL.

IMPORTANT

When sending Chapter Minutes to National Headquarters, please do not send carbon copies.

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Are These References on Your Shelf?

by James F. Whitacre

In the April 1961 issue of INHALATION THERAPY we promised additional references to help you in your work.

Here are two more.

Keep looking in subsequent issues for a continuation of this service.

4) Comroe, Julius H., Jr., M.D., *et al*, THE LUNG, Yearbook Publishers, Chicago, 1955.

This is a monograph divided into sections on pulmonary physiology, clinical application of function tests and an appendix containing useful data, equations and calculations. The first section comprises more than half the book, and is comprehensive and logically presented. Perhaps the most striking feature of this text is the remarkably clear and graphic diagrams used to illustrate it.

5) Levine, Edwin R., M.D., EFFECTIVE INHALATION THERAPY, National Cylinder Gas Company, Chicago, 1958.

Here is a book—unfortunately out of print for about three years now—written particularly for the inhalation therapy technician, and containing beautifully clear, straightforward explanations of various disease processes, with excellent semi-diagrammatic color illustrations which fit nicely with the text. There is also a short glossary of terms which is helpful for the neophyte.

There are discussions of practical aspects to be considered with regard to each of the modalities of therapy, but equipment and techniques themselves are not described.

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body respirator for severe emphysema

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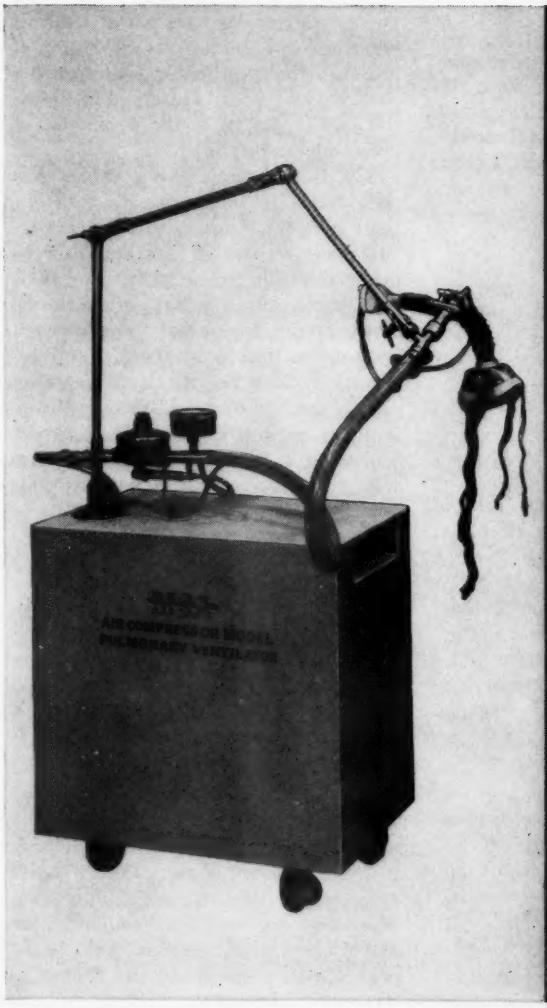

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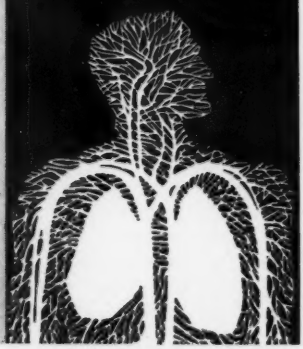
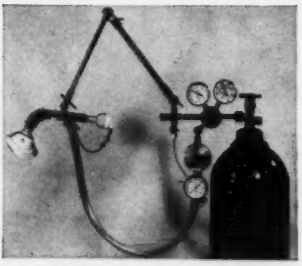


This is the compressor model used for air mixtures.

Other models are available for 100% oxygen or air-oxygen mixtures. Also, "total flow" Heated Mainstream Nebulizer available for all models.

Write for descriptive literature or ask for a demonstration.



Cylinder Model

MSA SAFETY EQUIPMENT HEADQUARTERS

Mine Safety Appliances Company
201 North Braddock Avenue
Pittsburgh 8, Pennsylvania

continued from page 11

WEIGHTS AND MEASURES

Formerly, different countries and some cities had their own systems of weights and measures, resulting in endless confusion and loss of time. This still exists to some extent. In the United States and Great Britain no less than five different systems are in common use. In the United States, however, there is a strong trend toward the use of the metric system in prescribing. This is stressed by the U.S. Pharmacopeia, and is employed in the medical services of the government.

The metric system is a decimal system, based on the *meter* as its unit of length. The meter corresponds roughly to the yard, being about 3 inches over that length. Its fractional units are all multiples of 10, and are the decimeter (10th of a meter), the centimeter, abbreviated cm (hundreth of a meter), and millimeter, abbreviated mm (thousandth of a meter). The thousandth part of a millimeter is a micron (plural, microns or micra). Going the other direction, 1000 meters is a kilometer, which is equivalent to about 0.6 mile.

The unit of capacity or volume is the liter. The contents of a cube whose edges measure 10 cm are 1000 cubic centimeters (abbreviated cc or ccm). This volume is considered for all practical purposes to be equivalent to a liter, and therefore the fractional form, the cc, is considered equivalent to the milliliter, or ml, which is the term derived from liter denoting a thousandth of it.

The unit of weight is the weight of a liter of distilled water at 4° Centigrade in vacuum. This amount of water weighs 1 *kilogram,* or 1000 grams. Hence one thousandth of a liter of water—1 ml or 1 cc —weighs one thousandth of a kilogram, or 1 gram. Kilogram is sometimes just called kilo; it is abbreviated kg. Gram used to be abbreviated simply g., but is now most commonly abbreviated gm. The decimal fractions of the gram are decigram, centigram, milligram and microgram, abbreviated dg, cg, mg and mcg, respectively, and corresponding to 0.1, 0.01 and 0.001 gm, and one millionth of a gram, respectively. The ten and hundred units—the decigram and centigram—as well as the deciliter and centiliter—are seldom used; but in linear measure the centimeter is the most commonly used unit. Here again, however, the tens designation, the decimeter, is not often encountered.

See the accompanying tables for approximate (in some cases, exact) equivalents between English and metric systems. To convert units of one system into the other, multiply the number of units by the equivalent opposite that unit in the tables. For example, to convert 5 centimeters into inches, multiply 5 by 0.4. To convert the resulting 2 inches back to centimeters, simply multiply 2 by 2.5. While this paper is not going into pressure matters, we are including a table of pressure equivalents with the others, for the reader's convenience.

ANESTHETIC GASES

The following is a list of the most common and most widely used medical and anesthetic gases which are employed in modern hospitals, and with which the inhalation therapist will frequently find himself in contact. He should be able to recognize each by its empirical chemical formula or cylinder color:

Gas	Symbol or Formula	Cylinder color	Explosive?
Oxygen	O_2	green	no
Helium	He	brown	no
Nitrogen	N_2	various (not standard)	no
Carbon Dioxide	CO_2	gray	no
Nitrous Oxide	N_2O	blue	no
Cyclopropane	C_3H_6	orange	yes
Ethylene	C_2H_4	red	yes
Chloroform	$CHCl_3$	—	no
Ether	$(C_2H_5)_2O$	—	yes
Fluothane	$CF_3CBrClH$	—	no

What causes Anesthetic explosions?

Explosions are among the most serious accidents that can occur with anesthesia. Oxygen, carbon dioxide, nitrous oxide and chloroform are non-inflammable. Oxygen is important in explosions, however, because it supports combustion; and so does nitrous oxide, which is just as likely to be present in anesthetic mixtures. Oil should not to be used on the valves or gauges of oxygen tanks, because the oil may ignite suddenly when exposed to high pressure oxygen, and cause a violent explosion.

Oxygen also must not be mixed in the same cylinder with Ethylene.

It is a myth that carbon dioxide reduces the inflammability of anesthetic agents as used clinically. Although chloroform is not inflammable, it is oxidized in the presence of an open flame or a cautery to phosgene gas (carbonyl chloride, $COCl_2$), chlorine and hydrochloric acid, all of which cause pulmonary irritation, cough and dyspnea.

The inflammable and explosive agents used in anesthesia are ether, ethylene, cyclopropane, divinyl ether and ethyl chloride. Fortunately, the incidence of anesthetic explosions is low, and only two deaths from this cause occurred in over two million anesthesias. Electric sparks are the cause of most accidents, and are mainly static in origin. Static sparks originate from friction in opening and closing valves, in the rubber breathing bag, in the flowing of dry gases through the anesthetic apparatus, etc., and are always a potential danger.

Static electrical discharges can be prevented, to some degree, by elevating the humidity of the air in the operating room to 65% or more. Complete and suitable grounding of the anesthetic apparatus, patient and surgical team is also effective but often difficult or impractical, necessitating conductive floors and shoes, and drag chains from tables and anesthesia machines. The wetting of the anesthetic breathing bag and hose before use is also an important safeguard against static ignition in the apparatus. An explosive anesthetic mixture should not be flowing through the apparatus at the time the mask is applied to the patient's face, and the mask should not be removed more frequently than is absolutely necessary.

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1 kilometer (km) = 1000 m = 0.6 mile
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TABLE II Volumetric

1 cubic centimeter (cc or ccm) is for practical purposes = 1 milliliter (ml)
1 cc or ml = 16 minims (drops)*
1 liter (L) = 1000 cc or ml
1 liter = 1.06 quarts = 2.11 pints
1 ounce (oz) = 30 cc or ml
1 pint = just under 1/2 liter (473 ml)
1 quart = just under a liter (946 ml)
1 gallon = 3.8 liters
1 teaspoon = 5 ml
1 Tbsp = 15 ml = 1/2 oz.
2 Tbsp = 30 ml = 1 oz.

***Drops may vary in size, depending on viscosity of fluid, and so may not correspond exactly to minims.**

TABLE III Weights

1 oz = 31 grains = 2 grams
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also = 760 mm Hg or 76 cm Hg or 30" Hg
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continued from page 11

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1 mm Hg = 0.007 cm H_2O

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As many as one or two patients out of every four may suffer immediate postoperative respiratory depression. Often these patients show no signs of impaired pulmonary function. They signal their difficulties only when tested by spirometer or measured for arterial O_2 and CO_2 tensions, per cent saturation of arterial O_2 and arterial pH.*

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*Cottrell, R. F., and Stoelting, V. K.: M. Times *89*:348 (April) 1961.

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Registered Inhalation Therapist wants to advance to position as head of department. Able to direct, supervise and perform activities of the Inhalation Therapy department or to install a department for those hospitals requiring it. A.A.I.T., Box 10, 332 South Michigan, Chicago 4, Illinois. Room 904.

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THERAPEUTIC AND RESUSCITATIVE

Eligibility for membership in American Association Inhalation Therapists, plus minimum 2 years experience in Inhalation Therapy under medical supervision req'd.

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fits all models and makes

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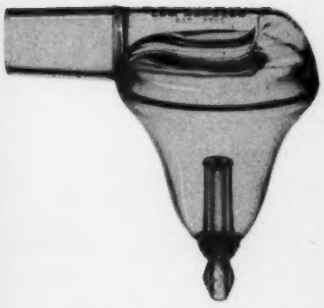
- . . . Produces a droplet free mist
- . . . Keeps nebulizing when tilted at any angle
- . . . Does not throw droplets
- . . . Does not clog easily
- . . . Produces optimum particle size
- . . . Is easy to clean
- . . . Keeps medicament in nebulizing area
- . . . Withstands rough usage
- . . . Fits all I.P.P.B. units



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manufactured by
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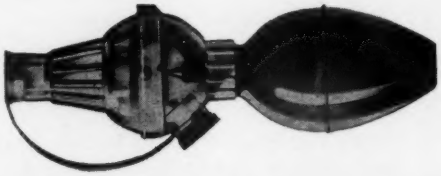
Lodi, Ohio Los Angeles 27, California

EQUIPMENT NEWS

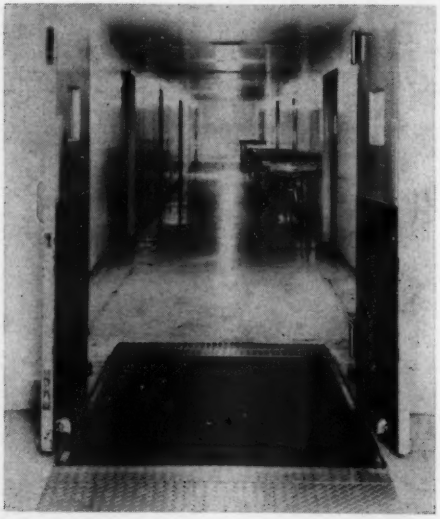
(Information and photographs are supplied by the manufacturers or distributors.)

Said by the manufacturer to be the first major advance in nebulizer construction and convenience in a decade, the new #42 Nebulizer is the latest to join the family of nebulizers produced by the DeVilbiss Company of Somerset, Pennsylvania.



It features non-breakable plastic construction of parts that are easily separated for cleaning, and which are designed to prevent incorrect reassembly. It is supplied with an extra jet and a handy pocket carrying pouch. **641**

The National Cylinder Division of Chemetron Corporation, Chicago, is offering a means of minimizing spread of infection by sterilizing the shoe soles and the wheels of rolling equipment which cross its "Sterile-Tread" disinfecting mat placed in doorways to operating and delivery rooms, nurseries, etc.



The units are custom made, and are usually twelve feet long and nearly as wide as the hall or doorway. They consist of shallow pans containing thin plastic sponges soaked with disinfectant. The sponge is covered by canvas. The mat has sufficient resiliency to permit an imprint, which forces the disinfectant to penetrate the canvas and contact the bottom and sides of shoe soles and equipment wheels. **642**

Oxygen Equipment & Service Company, Chicago, offers specialized equipment for recovery room and other inhalation therapy applications.

Shown here is a set-up consisting of two thoracic drainage units, one intermittent suction regulator and bottle, one vacuum regulator drainage and aspiration unit, and two oxygen flowmeters—one with humidifier and one without.

Any combination of equipment may be provided for permanent use in one location, or to be moved from one outlet to another, using Oxequip flush service quick connect outlets. **643**

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. . . can be obtained by mailing this coupon to "Inhalation Therapy," Room 904, 332 South Michigan Avenue, Chicago 4, Illinois.

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